Improved Glycemic Control through Continuous Glucose Sensor-Augmented Insulin Pump Therapy: Prospective Results from a Community and Academic Practice Patient Registry

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Abstract

Background:

Conducted by highly experienced investigators with abundant time and resources, phase III studies of continuous glucose sensing (CGS) may lack generalizability to everyday clinical practice.

Method:

Community or academic practices in six Central and Eastern European or Mediterranean countries prospectively established an anonymized registry of consecutive patients with type 1 insulin-dependent diabetes mellitus starting CGS-augmented insulin pump therapy with the Paradigm® X22 (Medtronic MiniMed, Northridge, CA) under everyday conditions, without prior CGS with another device. We compared glycosylated hemoglobin (GHb) values before and after 3 months of CGS and assessed relationships between insulin therapy variables and glycemia-related variables at weeks 1, 4, and 12 of CGS.

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Abstract cont.

Results:

Of 102 enrolled patients, 85 (83%) with complete weeks 1, 4, and 12 sensor data and baseline/3-month GHb data were evaluable. Evaluable patients were ~54% male and ~75% adult (mean age, 33.2 ± 16.9 years) with longstanding diabetes and high personal/family education levels. Mean GHb declined significantly after 3 months of CGS (7.55 ± 1.33% at baseline to 6.81 ± 1.08% after 12 weeks, 0.74% absolute decrease, $P < 0.001$). The absolute GHb reduction correlated significantly ($P < 0.0005$) with baseline GHb: larger absolute reductions tended to occur when baseline levels were higher. An increased basal insulin dose as a percentage of the total daily insulin dose and a decreased daily bolus count from week 1 to week 12 of CGS predicted GHb improvement from baseline to week 12.

Conclusions:

CGS-augmented insulin pump therapy appears to improve glycemic control in type 1 diabetes in varied everyday practice settings.

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